

CLAIMS

What is claimed is:

1. A head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical system are visible in the field of view in front of said frame, comprising:

10 a first direction detection means disposed in part of said frame for detecting the direction of the user's head; an observation point detection means disposed in part of said frame for detecting said user's line of sight; a trigger input means for transmitting trigger signals; and 15 an image generation means for controlling images generated on said liquid crystal display panel based on signals from said first direction detection, observation point detection, and trigger input means.

2. An image display device according to Claim 1 further having a second direction detection means mounted on said user for detecting the direction of the user's body to transmit the detection signal to said image generation means.

3. An image display device according to Claim 2 wherein
said image generation means drives said liquid crystal
display panel to display an image on a virtual screen as a
virtual image, selects and identifies an arbitrary image
5 from the plurality of displayed images based on the output
of said observation point and direction detection means, and
specifies the identified image as those to be manipulated on
the basis of the output of said trigger input means.

4. An image display device according to Claim 3 wherein
10 said image generation means moves the arbitrary selected
image to the positions on the virtual screen which are
determined on the basis of the output of said observation
point and direction detection means and stops the movement
in response to the output of said trigger input means.

15 5. A head-mounted image display device wherein a liquid
crystal display panel and an enlarging optical system are
housed in a frame and wherein images generated on said
liquid crystal display panel through said enlarging optical
system are visible in the field of view in front of said
20 frame, having:

a screen disposed in the direction in which enlarged virtual images generated by said enlarging optical system are formed.

6. An image display device according to Claim 5 further
5 having a synthesizing optical means for synthesizing an image showing the exterior of said user and an image on said liquid crystal display panel.

7. An image display device according to Claim 6 wherein
10 part of an outer sheath case for a portable computer comprises said screen.

8. A head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical 15 system are visible in the field of view in front of said frame, having:

an input device with a sensor for inputting signals;
and

20 an image generation means for assigning input keys to locational information from said input device and synthesizing on/off information on the input keys and the

results of arithmetic operations to allow said liquid crystal display panel to generate synthesized images.

9. An image display device according to Claim 8 wherein input information is displayed on part of the display screen, while the results of arithmetic operations are displayed on the other part.

10. A head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical system are visible in the field of view in front of said frame, having:

a location detection means for detecting the field of view in the horizontal or vertical directions;

15 a voice input means joined with said frame using a flexible joint; and

an image generation means for controlling images generated on said liquid crystal display panel based on signals from said location detection and voice input means.

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11. An image display device according to Claim 10 wherein said voice input means is composed of a small microphone that enables unspecified speakers to input voices thereto.

12. A head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical system are visible in the field of view in front of said frame, having:

an observation point,
a location detection means for detecting the line of sight of
a user of said device,
view in the horizontal or vertical directions; and

an image generation means for segmenting the display area into a first display area for displaying images and a second display area for displaying attributes of an image, and switching between said first and second display areas based on the output of said observation point,
location detection means.

13. An image display device according to Claim 12 wherein said image generation means can switch between said first and second display areas based on the output of said observation point,
location detection means, and controls attribute data shown in said second display area according to voice input signals.

14. A head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical system are visible in the field of view in front of said frame, having:

a location detection means for detecting the field of view in the horizontal or vertical directions; and

an image generation means for segmenting the display area into a first display area for displaying images and a second display area for displaying attributes of an image, and switching between said first and second display areas based on the output of said location detection means to display in said second display area for displaying attributes of an image geometry or operation models to be incorporated in said first display area.

15. An image display device according to Claim 14 wherein geometrical data or camera work to be incorporated in said first display area is displayed in said second display area.

20 16. An image display device according to Claim 14 wherein space-time area data to be incorporated in said first display area is displayed in said second display area.

17. An image display device according to Claim 14 wherein space-time area data to be incorporated in said first display area is three-dimensionally displayed in said second display area with a parallax provided therein.

5 18. A data processing apparatus comprising:

a head-mounted image display device wherein a liquid crystal display panel and an enlarging optical system are housed in a frame and wherein images generated on said liquid crystal display panel through said enlarging optical system are visible in the field of view in front of said frame; and

a main body including a central processing unit and a keyboard, with said image display device and said main body connected together via a connector.

15 19. A data processing apparatus according to Claim 18 wherein said connector has a power supply for driving said image display device and an information transmission means for transmitting image display information to said image display device.

20 20. A data processing apparatus according to Claim 18 wherein said main body has a socket in which said liquid

crystal display panel is mounted, wherein the liquid crystal display panel mounted in said socket and the liquid crystal display panel provided in said head-mounted image display device are each detachably constituted, and wherein said
5 liquid crystal display panels are also configured so as to be shared by said main body and said head-mounted image display device.

21. A data processing apparatus comprising a portable arithmetic operation processing device and a head-mounted
10 image display device for displaying image information from said arithmetic operation processing device, wherein:
said arithmetic operation device has a housing section for housing the image display device while it is out of use,
and wherein:
15 said image display device comprises a liquid crystal display panel provided so as to correspond to at least one of the user's eyes, an enlarging optical means for forming enlarged virtual images on said liquid crystal display, and a holding means for holding said liquid crystal display
20 panel and said enlarging optical means in front of the user's face and fixing the entire apparatus to the user's head.

22. A data processing apparatus according to Claim 21
wherein said arithmetic operation processing device has
therein a charger having an electric contact in said housing
section, and wherein said image display device has an
5 electric contact formed so as to connect to said electric
contact in said housing section when said image display
device is housed in said housing section and a battery
charged when both contacts are connected together.